The Matrix – Medical Product Design: Single Patient Use vs. Sustainability

Elle Mileti

Sustainability Problems – STSS 4270

Fall 2012, Costelloe-Kuehn

30 October 2012

Environmentally friendly design, sometimes called sustainable design or green design, has become a topic of great social and financial significance. Companies are beginning to discover the benefit and the necessity of buying and using more ecofriendly products and services. Although the term green refers specifically to the environment, true sustainable design considers the social and financial effect on a product as well as its effect of the environment. From a designer or engineer's perspective, sustainable design takes the entire product life cycle into account, from creation to disposal, during the initial design of the product. The success of a product is measured by its ability to balance financial, environmental, and social factors.[1]

As with other industries, the medical industry has incentive to push towards greener, more sustainable products. The United States alone produces more than 6600 tons of medical waste per day, totaling well over 2 million a year. Although a portion of that waste must be incinerated because of biohazards, about 85% need not be. Additionally, there is financial motive. Healthcare facilities in the United States spend more than $130 million annually to move, store, and incinerate their waste.[2] In an effort to reduce such costs, many hospitals and group purchasing organizations (GPOs) have adopted a preference for eco-friendly products, specifically PVC-free, mercury-free, and lead-free products. The significant buying power of both hospitals and GPOs will likely help drive the medical device industry to reduce packaging materials, design products for disassembly and recyclability, and support end-of-life product reclamation programs.

However, on the flip side of things, approximately 90% of medical device waste consists of disposable, one-time-use products or components.[3] Although it may seem like a simple fix to solve the problem by reducing the number of disposable components, many manufacturers find it difficult to do that from both a fiscal and a safety point of view. Firstly, a significant portion of medical device manufacturers generate the bulk of their revenue from the sale of disposable products and adherence to this business model is advanced by the risks associated with hazardous medical waste, biological contamination (specifically cross contamination from patient to patient), and the high cost of product sterilization and

reprocessing. Further concerns conflicting with the quick transition to more sustainable design come directly from designers and engineers. As the medical device industry is heavily regulated already and products must comply with strict FDA guidelines as it is, sustainable practices can be seen as hampering material choice and impeding innovation. Furthermore, the possibility of legal liability and lengthy product development cycles has also slowed the adoption of sustainable practices in the medical device industry.

References

[1] Kadamus, Chris. "Sustainability in Medical Device Design." *Medical Device & Diagnostic Industry*. (01 Sept. 2008) Online. <http://www.mddionline.com/article/sustainability-medical-device-design>.

[2] "Waste Reduction: Why Focus on Waste," (Arlington, VA, *Practice Greenhealth* Online. <http://cms.h2e-online.org/ee/waste-reduction>.

[3] "An Environmental Guide for the Medical Device Industry of Massachusetts," *Commonwealth of Massachusetts Executive Office of Environmental Affairs* (Boston, December 2006): 46.

[4] Jean Johnson, "Hospitals Going Green a Win-Win Move," *Body1 Inc.* (Cambridge, MA, 2006) Online. <http://www.medtech1.com/new_tech/newtechnologyfeature.cfm/237/11>.

[5] "RoHS Exemption for Medical Devices is Under Review" *Green Supply Line* (2006) Online. <www.greensupplyline.com/howto/192300282>.